WHAT IS CLAIMED IS:

1. An optical film comprising:

a first surface defined by a first surface structure function modulated by a second surface structure function such that the first surface acts to diffuse light incident on the film, wherein the first surface structure function has a function of a microlens structure, and the second surface structure function has characteristics to provide the diffuse light.

2. The optical film of claim 1, wherein the first surface has a correlation function value of less than about 37 percent in a correlation length of about 1 cm or less.

3. The optical film of claim 2, wherein the first surface structure function is one of a cylindrical lens microlens structure, a spherical lens microlens structure, an aspherical lens microlens structure, an elliptical lens microlens structure, and a parabolic lens microlens structure.

4. The optical film of claim 3, wherein the first surface structure function is a cylindrical lens microlens structure.

5. The optical film of claim 3, wherein the optical film includes a first plurality of elongated elements, each having a cross-section substantially corresponding to a cylindrical lens, the elongated elements being generally parallel in a first direction on at least the first surface of the film.

6. The optical film of claim 5, wherein the optical film has a second surface opposite to the first surface, the second surface being smooth.

7. The optical film of claim 5, wherein the film has a second surface opposite to the first surface, the second surface being defined by the first surface structure function modulated by the second surface structure function, wherein the second surface has a second plurality of elongated elements, each having a cross-section of a cylindrical lens, arranged on the second surface to be generally parallel in a second direction.

8. The optical film of claim 7, wherein the first direction is generally parallel to the second direction.

9. The optical film of claim 7,wherein the first direction is generally perpendicular to the second direction.

10. A prism film structure comprising:

a prism; and

a light diffusing film arranged over the prism film, the light diffusing film comprising a first surface defined by a first surface structure function modulated by a second surface structure function such that the first surface acts to diffuse light incident on the film, wherein the first surface structure function has a function of a microlens structure, and the second surface structure function has characteristics to provide the diffuse light.

11. The prism film structure of claim 10, wherein the first surface structure function is one of a cylindrical lens microlens structure, a spherical lens microlens structure, an aspherical lens microlens structure, an elliptical lens microlens structure, and a parabolic lens microlens structure.

12. The prism film structure of claim 10, wherein the prism film comprises a plurality of raised prismatic features.

13. An optical structure comprising:

a light source; and

a light diffusing film arranged over the light source, the light diffusing film comprising a first surface defined by a first surface structure function modulated by a second surface structure function such that the first surface acts to diffuse light incident on the film, wherein the first surface structure function has a function of a microlens structure, and the second surface structure function has characteristics to provide the diffuse light.

14. The optical structure of claim 13, further comprising:

a prism film arranged between the light source and the light diffusing film.

15. The optical structure of claim 14, wherein the prism film comprises a plurality of raised prismatic features.

16. A backlight display device comprising:

a light source for generating light;

a light guide for guiding the light therealong including a reflective surface for reflecting the light out of the light guide; and

a light diffusing film arranged on the light guide, the light diffusing film comprising a first surface defined by a first surface structure function modulated by a second surface structure function such that the first surface acts to diffuse light incident on the film, wherein the first surface structure function has a function of a microlens structure, and the second surface structure function has characteristics to provide the diffuse light.

17. An optical display device comprising:

a substrate comprising a source of light;

a modulation array comprising a plurality of modulation elements, including liquid crystal material, arranged to modulate light received from the source of light; and

a light diffusing film arranged adjacent the modulation array comprising a first surface defined by a first surface structure function modulated by a second surface structure function such that the first surface acts to diffuse light incident on the film, wherein the first surface structure function has a function of a microlens structure, and the second surface structure function has characteristics to provide the diffuse light.

18. The optical display device of claim 17, wherein the modulation array comprises a polarizer arranged below the liquid crystal material, the light diffusing film arranged on the polarizer.

19. The optical display device of claim 17, wherein the modulation array comprises a polarizer arranged above the liquid crystal material, the light diffusing film arranged on the polarizer.

20. A backlight display device comprising:

a light source for generating light;

a light guide for guiding the light therealong including a reflective surface for reflecting the light out of the light guide;

a prism film; and

a light diffusing film arranged above the prism film, the light diffusing film comprising a first surface defined by a first surface structure function modulated by a second surface structure function such that the first surface acts to diffuse light incident on the film, wherein the first surface structure function has a function of a microlens structure, and the second surface structure function has characteristics to provide the diffuse light.

21. A method of forming an optical film, comprising:

forming the optical film, the optical film comprising a first surface defined by a first surface structure function modulated by a second surface structure function such that the first surface acts to diffuse light incident on the film, wherein the first surface structure function has a function of a microlens structure, and the second surface structure function has characteristics to provide the diffuse light.

22. The method of claim 21, wherein the forming the optical film comprises at least one of the technigues of photolithograpy, gray-scale

lithography, microlithography, electrical discharge machining and micromachining using hard tools.

23. The optical film of claim 1, wherein the first surface is defined by one of the following equations :

$S_1 = A \sin(x + R1(x,y)) \sin(y)$,

$S_2 = A \sin(x) \sin(y + R1(x,y))$, and

$S_3 = A \sin(x + R1(x,y)) \sin(y + R2(x,y))$,

wherein x and y are coordinates in the x-y plane of the film, R1(x,y) and R2(x,y) are random variables, and A is one of a constant and a random variable.

24. A prism film comprising:

a first surface comprising a plurality of raised prismatic features; and

a second surface opposing the first surface, the second surface defined by a first surface structure function modulated by a second surface structure function such that the second surface acts to diffuse light incident on the film, wherein the first surface structure function has a function of a microlens structure, and the second surface structure function has characteristics to provide the diffuse light.

25. The prism film of claim 24, wherein the first surface structure function is one of a cylindrical lens microlens structure, a spherical lens microlens structure, an aspherical lens microlens structure, an elliptical lens microlens structure, and a parabolic lens microlens structure.